

**Symposium
on
FARMER-LED INNOVATIONS FOR SUSTAINABLE AGRICULTURE**

14-15 December, 2007, Ranchi (Jharkhand)

PROCEEDINGS

Co-sponsored by



TRUST FOR ADVANCEMENT OF AGRICULTURAL SCIENCES
NATIONAL ACADEMY OF AGRICULTURAL SCIENCES
PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS AUTHORITY
NATIONAL RAINFED AREA AUTHORITY

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BIRSA AGRICULTURAL UNIVERSITY



TRUST FOR ADVANCEMENT OF AGRICULTURAL SCIENCES (TAAS)

GOAL

An accelerated movement for harnessing agricultural sciences for the welfare of the people.

MISSION

To promote growth and advancement of agriculture through scientific interactions and partnerships.

OBJECTIVES

- Sponsoring seminars and special lectures on emerging issues and new developments in agricultural sciences in different regions of India.
- Promoting local lecture tours and visits to institutions within the country of the eminent scientists from international organizations abroad and of the academicians of foreign agricultural academies visiting India.
- Facilitating partnership with non-resident Indian agricultural scientists visiting India on sabbatical or short leave.
- Instituting awards for outstanding contributions to Indian agriculture by scientists of Indian origin abroad.
- Arranging special lectures of eminent agricultural scientists in various schools in different parts of the country.
- Providing support to agricultural scientists for participation in conferences/seminars, in India and abroad, for oral presentation of their research work.
- To act as think tank on key policy issues relating to agricultural research and development (ARD).

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Dr. RS Paroda

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Acronyms

AICRP	All India Coordinated Research Project
ARD	Agricultural Research and Development
BAU	Birsa Agricultural University
FMD	Foot and Mouth Disease
HARP	Horticulture & Agroforestry Research Program
HOD	Head of the Department
ICAR	Indian Council of Agricultural Research
ICT	Information & Communication Technology
INRM	Integrated Natural Resource Management
IPR	Intellectual Property Rights
ITK	Indigenous Technical Knowledge
IVLP	Institute-Village Linkage Program
LFM	Link Farmers to Market
MSSRF	MS Swaminathan Research Foundation
NAAS	National Academy of Agricultural Sciences
NARI	National Agricultural Research Institutions
NARS	National Agricultural Research System
NBPGR	National Bureau of Plant Genetic Resources
NGO	Non-Government Organization
NRAA	National Rainfed Area Authority
NRM	Natural Resource Management
PGR	Plant Genetic Resources
PGS	Post-Graduate School
PHT	Post-harvest Technology
PPV&FRA	Protection of Plant Varieties and Farmers' Rights Authority
SAU	State Agricultural University
TAAS	Trust for Advancement of Agricultural Sciences

Symposium on FARMER-LED INNOVATIONS FOR SUSTAINABLE AGRICULTURE

14-15 December, 2007, Ranchi (Jharkhand)

PROCEEDINGS

A Symposium on Farmer-led Innovations for Sustainable Agriculture was organized at the Birsa Agricultural University, Ranchi, on 14-15 December, 2007 in collaboration with Trust for Advancement of Agricultural Sciences (TAAS) and the National Academy of Agricultural Sciences (NAAS). It was also co-sponsored by the Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA), Government of India and the National Rainfed Area Authority (NRAA). The symposium was attended by a large number of innovative farmers, officers and the scientists from Birsa Agricultural University, Ranchi, ICAR Institutes and the representatives of PPV & FRA, TAAS, NRAA and NAAS. The details of the Program are given in Annexure I, whereas list of participants is provided in Annexure II. The Symposium was divided into two Technical Sessions, beside Inaugural and Plenary Sessions.

Inaugural Session

The Inaugural Session of the Symposium was chaired by Dr. NN Singh, Vice-Chancellor, BAU Ranchi. Dr. RS Paroda, former-Director General, ICAR and Chairman, TAAS was the Chief Guest, whereas Dr. S Nagarajan, Chairperson, PPV&FRA was the Guest of Honor. Dr. RP Singh 'Ratan', Director, Extension Education, BAU welcomed the



Lighting of the Lamp

delegates and emphasized the significance of the Symposium. In his remarks, Dr. AK Sikka, representing Dryland Area Authority, highlighted the importance and effectiveness of farmer-led innovations. He stressed upon the need for women's empowerment for strengthening the delivery mechanism at village level. He expressed concern over the fast degrading natural resource base. For enhancing production and productivity, he suggested integration of resources including the human resource. In his chairman's address, Dr. NN Singh stated that innovation by farmers had contributed tremendously towards rural prosperity and for that matter, this symposium was very timely.



Seen on the dais are (L to R)

Dr. RP Singh, Dr. NN Singh, Dr. RS Paroda, Dr. S Nagarajan, Dr. AK Sikka and Dr. PS Pathak

Dr. S Nagarajan, in his address, lauded the contribution of farmers towards modern agricultural science and technology. He said that genetic diversity had been conserved for ages by the farmers. He described how the farmers had been traditionally conserving bio-diversity by growing plants around houses, temples, etc. He appreciated the initiatives of the Parliament of India which gave several rights to the farmers, including PPV&FRA. The registration of variety is mandatory and the breeder has to prove clearly how his variety is distinct from other existing varieties. The farmers have been given the rights to demand compensation if the performance of a variety is not as proclaimed. He informed that a "Gene Fund" for the farmers has been created. India is rich in bio-diversity as three major Agro-biodiversity Centres fall within the jurisdiction of Indian sub-continent. He also cautioned that the documentation of genetic resources was necessary in the context of fast-emerging IPR era.

Dr. RS Paroda elaborated, in his inaugural address, the importance of knowledge possessed by the farmers. He wanted the scientists to listen carefully to the farmers and learn from their rich experiences. He cited a few examples of significant contributions made by the farmers, like, best salt tolerant varieties of rice, namely, Pokkali and Kharchia of wheat.

According to him, the farmers deserve to reap the benefits of their valuable contributions. Importance of participatory research was also highlighted for blending the indigenous knowledge of farmers with scientific knowledge in order to reap much greater benefits. Such efforts need blending of technologies, their wider testing and further refinement. He also emphasized that Jharkhand State could play an important role in promoting organic farming.

For enhancing the income at the farm level, Dr. Paroda highlighted the importance of processing and value addition which could be achieved through collaborative efforts of resource poor farmers either through formation of Self Help Groups or Co-operatives. He was surprised that only 10% area of Jharkhand was irrigated despite 1400 mm average annual rainfall. He said that Jharkhand needed scientific and efficient use of water. According to him, the use of liming should be vigorously promoted in the acidic soils in eastern India and the area under pulses and oilseeds needs to be increased. Precision farming was critical for the success in dryland agriculture.

SESSION-I: Agro-biodiversity Conservation and Genetic Enhancement

Technical session on Agro-biodiversity Conservation and Genetic Enhancement was chaired by Dr. S Nagarajan, Chairman, PPV & FRA. The speakers of the session included Dr. S Kumar, Head, Horticulture and Agroforestry Research Program (HARP); Dr. BM Choudhary, Chairman, Department of Horticulture; Dr. JB Tomar, Head, NBPGR Center, Ranchi; Dr. AK Sinha, Dean, Faculty of Veterinary Science and Animal Husbandry; Dr. AK Jaiswal, Indian Institute of Natural Resins and Gums, ICAR; Dr. AK Singh, Head, Department of Aquaculture, BAU; and a number of innovative farmers from Godda, Dumka and Sahebganj districts of Jharkhand.



A section of the audience

Dwelling upon the contributions of farmers for the conservation of biodiversity with regard to horticultural plants, Dr. S Kumar stated that the popular varieties of fruit crops viz., Langra and Dasherri in mango and Shahi as well as China in litchi were developed by the farmers. He informed that the propagation techniques like inarching in mango and ground layering in guava are the specific valuable contributions of farmers. He also emphasized that around 10,000 land races in horticultural crops are found in India, the documentation of which is urgently needed. He expressed concern on the loss of 155 land races every year at the global level. Hence, a national level participatory PGR management initiative is required to be undertaken. He

lauded the efforts of MSSRF, Chennai and desired that similar activities need to be replicated elsewhere.

Dr. BM Choudhary delineated the benefits of medicinal plants in treating diseases of human beings and animals. He said that huge biodiversity existed in the State which needs to be collected and conserved.

Dr. JB Tomar, Head, NBPGR, Ranchi, discussed the importance of biodiversity of the country and appreciated the role played by the National Biodiversity Authority, Chennai and NBPGR for conservation of these resources.

Dr. AK Sinha described the importance of cow in nurturing the mother nature and reiterated the slogan 'Save Cow - Save Nature'. He said that the potential of biogas energy in India is to the tune of 17,000 MW. Cow dung is used as fuel, fertilizer, pot cleaner and for pest control etc. The efficacy of "Panchagavya" is proved. Cow urine has the potential to cure asthma and suggested further research in exploring its potential for control of other diseases.

Dr. AK Jaiswal explained the importance of traditional knowledge of tribal people in lac industry. He cited an example of farmers' innovation for controlling loss of lac from nibbling by squirrel. He said that lac cultivation was an important source of livelihood for the people living in forest areas.

Dr. AK Singh threw light on the unique farmers' practice of fish production. He said that farmers use cow dung and mustard cake as fish feed and leaves of *Imli* for the control of diseases. He explained how the farmers were selecting a particular type of soil for respiration by fish and using nodular plants for increasing nitrogen content in the pond.

Shri Anand Shankar Rai, an innovative farmer from Godda district of Jharkhand, narrated his success in relation to establishment of lemon grass distillation unit. Shri Sadanand Mandal, a farmer from Dumka stated that the farmers used bark of *Farad* tree for controlling wounds in animals and *Bhelwa* fruit for protecting animals from diseases. He further mentioned that Neelhoush feather + grass successfully controlled cough. On the basis of his 40 years' experience in farming, he said that time of sowing was the most important factor. Shri Kuldeep Singh, a farmer from Sahebganj, said that he was using Bamboo boaring and producing onion seed. He demanded establishment of cold storage facilities at the village level.

In his closing remarks, Dr. SNagarajan reiterated that "anybody who thinks rationally is a scientist". Regarding Panchagavya, he said that it has to be proved scientifically. Agreeing with the speakers, he told that documentation was indeed important in such claims. Narrating example of Village Seed Bank of Orissa, he emphasized that it was necessary to promote village seed banks in future.

SESSION-II: Integrated Natural Resource Management

The session on NRM was chaired by Dr. PS Pathak. Dr. RP Singh 'Ratan', Director Extension Education; Dr. BN Singh, Director Research; and Dr. BK Rai, Chairman, Department of Pharmacology were the main speakers. Besides them, farmers from different districts of Jharkhand also expressed their views. Dr. RPSingh 'Ratan' presented

a paper on “ITKs for Crop Diversification”. He highlighted the farmers’ knowledge and wisdom of practicing mixed cropping, inter-cropping, para-cropping and relay cropping through which farmers have diversified their crop growing practices for enhanced productivity, profitability as well as mitigating the risk for meeting the diversified household needs. He highlighted over 100 ITKs from across the country. Dr. BN Singh mentioned that organic farming is more relevant for the farmers of Jharkhand State. He stated that BAU has taken up organic seed production and three types of farming models have been developed by BAU at its headquarter, Darisai and Lohardaga in an area of 4 ha, 2 ha and 1 ha, respectively.

Dr. BK Rai shared numerous experiences with regard to treatment of animal diseases through ITKs. He stated that *Bhant* leaves, flower extract of *Urhul*, leaves of Custard apple, *Sharifa* seed paste and Camphor were successful in controlling deworming, diarrhea in goat, skin disease and FMD, respectively.

Shri Varun Kumar Singh from Dumka shared his experiences that ploughing of fields retained more water and sowing of paddy in Rohini *Nakshatra* gave better yield. Regarding ITK, he said *Palas* prevented insect attack and *Harjora* plant was successful in curing bone disorders in animals.

Shri Yadunath Gorai (East Singhbhum) narrated his experience with regard to late sowing. He said that changing soil layers of nursery by polythene sheet kept the plant height under check. Shri Pratap Narayan Singh (Hazaribagh) informed that formation of co-operatives was important for increasing income.

Shri Kapil Deo Thakur (Palamu) said that castor oil was superior to mobil oil as lubricant. For facilitating seed germination during winter, he said that the seeds should be soaked in water for 12 hours, wrapped in cloth and put under soil near cooking place. Shri Kaira Sinku (West Singhbhum) desired to have efficient irrigation systems for water lifting. Shri Jhari Ram Mahto (Bokaro) highlighted the efficacy of tobacco stem for controlling pests. He desired to have some mechanism of guarding against menace of elephants. Shri Dhaneshwar Mahto (Lohardaga) highlighted that 4 lines of brinjal + 1 line of marigold and cultivation of chickpea with coriander reduced the pest attack.

Shri Ramkesh Choudhary (Garhwal) described the importance of wet seeding, transplanting and re-transplanting. Shri Baidyanath Dangi (Chatra) discussed at length his experiences such as dusting of ash mixed with barn reduced pest attack. He also mentioned that *Thethar* plant leaves, boiled in water and then sprayed, reduced the pest attack. Similarly, Garlic powder and cake of *Darha* controlled pest of potato and sugarcane, respectively. He further stated that when field was kept moist, the attack of blight was not noticed and plunging hot iron rod in whorl killed sugarcane pest. Dealing with the treatment of animal diseases through ITKs, he said that root of *Vanaut* and *Ber* cured wounds in animals. He also narrated some antidotes like use of turmeric extract against Celphos poisoning and use of 2-3 earthworms against snake venom. Dr. PS Pathak summed up the experiences of farmers in his concluding remarks and desired to have all such innovations properly documented.

Evening Lecture

“Strategy for Increasing Productivity Growth Rate in Agriculture” by Dr. RS Paroda.

An evening lecture on “Strategy for Increasing Productivity Growth Rate in Agriculture” was delivered by Dr. RS Paroda, former Director General, ICAR and Chairman, TAAS. He highlighted that Green Revolution mainly succeeded due to political commitment, institutional support and availability of trained manpower. Launching of All India Co-ordinated Research Projects (AICRPs) had boosted joint efforts of scientists towards agricultural research for development. For enhancing productivity, two-pronged approach



Dr. Paroda delivering Evening Lecture

was now needed: (i) Improvement of germplasm through plant breeding and biotechnology and (ii) Integrated Natural Resource Management (INRM). He said that eastern India was a sleeping giant, the potential of which needs to be scientifically harnessed. He stated that genetic improvement was key to solve many problems. Examples of hybrid maize and Bt Cotton were cited. Maize productivity had almost doubled (2 ton/ha) due to the introduction of single cross hybrid technology in 2001. The pest problem in cotton has reduced significantly due to introduction of Bt Cotton. He said that technologies like zero tillage and raised bed planting in wheat has tremendous potential. Also mention was made of future challenges such as: increased productivity, higher income and sustainability. He anticipated that soybean may soon become number one oilseed crop. While concluding, he emphasized the need to strengthen cropping systems research, to adopt bottom-up approach for technology transfer, to change NARI into NARS, to promote the concept of Agri-Clinics, and to establish links of farmers with markets through active involvement of stakeholders, especially the NGOs and Private Sector.

Plenary Session

A panel discussion was held on 15 December, 2007. Dr. RS Paroda and Dr. NN Singh were Chairman and Co-Chairman, respectively. Shri Ashok Bhagat, Secretary, Vikas Bharti laid emphasis on documentation of farmers’ knowledge. He suggested an effective blend between ITKs and modern technology. Shri Ramkesh Choudhary, a progressive

farmer from Garhwa told about intercropping of chickpea/lentil/pea with coriander and that of papaya with ginger. Shri Pratap Singh, a farmer from Hazaribagh talked about intercropping of tomato with cucurbitaceous crops and growing marigold around vegetables. Dr. Paroda emphasized that “one alone can do nothing”, but “when people unite, they can achieve everything”. Regarding co-operative efforts, he said that honesty of office bearers is of paramount importance. Dr. UN Verma, Chairman, Department of Agronomy stated that validation of ITKs was necessary and if encouraging results are found, the same may be documented and IPRs protected. Dr. GS Dubey, Dean, PGS said that Green Revolution in eastern India is yet to come. He suggested that technology generation must take into account the specific needs of the farmers. Refinement of ITKs needs to be made to make them more effective. He said that phytochemicals need to be investigated for the control of insect pests. He strongly recommended that ITKs should form part of our course curriculum. Dr. S Kumar mentioned that the villagers should be actively involved in the conservation of biodiversity. For documentation of ITKs, the institutional support is a must. He stated that we were entering into an era of knowledge society where only knowledgeable persons would succeed in the race.

Dr. RP Singh ‘Ratan’, Director, Extension Education revealed that farmers normally refine the technology recommended by the scientists. Dr. S Nagarajan concluded that there was an urgent need to have Farmers’ Forum whereby they could have frequent interface with the scientists. Dr. PS Pathak, NAAS was happy with the outcome of the Symposium. In his Chairman’s remarks, Dr. RS Paroda stated that the Symposium turned out to be very successful, since, farmers interacted effectively with the scientists on various important issues related to sustainable agriculture. He stated that our mindset must change, otherwise we would lag behind. The scientists must act as facilitator and win the confidence of the farmers. He also suggested that our research priorities be defined after due consultation with the farmers. For enhancing farmer-scientist interface, there was an urgent need to have a National Forum of Farmers to promote ARD for sustainable agriculture. The vote of thanks was proposed by Dr. (Ms) Niva Bara, HOD (Agricultural Extension).

Major Recommendations

Based on two-day deliberations and effective brainstorming on the subject, the following recommendations were adopted in the Plenary Session for drawing the attention of all concerned scientists, farmers and the policy makers in order to further promote the farmer-led innovations for sustainable agriculture:

- Farmer-led innovations are both realistic and more imaginative to address location specific problems. These are also aimed at sustainable agriculture. Despite, in many cases, lacking the scientific explanations, farmers’ practices are invariably practical and sound. Therefore, we need to document and disseminate such innovations for wider adoption.
- Indigenous Technical Knowledge (ITK) has to be blended with scientific innovations through participatory research approach. This would require concerted efforts for research reorientation and change in the mindset of scientists. Also institutional support for scientific documentation of ITKs would be needed as a matter of priority.

- Farmer-led innovations would often require validation and refinement for which Agricultural Universities and ICAR Research Institutions could provide laboratory equipment and facilities through establishment of Technology Parks. Benefits of such refined/improved technologies could be shared among the farmer entrepreneurs and the concerned scientists/institutions through commercialization.
- Organic farming offers greater opportunities for higher income to producers and better health to the consumers. Production and marketing of products of organic farming would require effective quality control and assurance to the consumers. For this, there is an urgent need to establish quality control laboratories for testing various farm products.
- Protection of IPRs would be a pre requisite for access as well as benefit sharing. Hence, creation of IPR cells in all institutions/SAUs and their strengthening would be required, if not already created.
- For enhanced income and due share in the price of farm produce, it is imperative to link farmers to the markets (LFM). For LFM, it is necessary to have value addition through adoption of low cost, rural based post-harvest technologies (PHT) with appropriate storage/marketing facilities. Besides, market intelligence through effective use of Information and Communication Technology (ICT) would enable proper decision making. All these initiatives would also help generate employment for the rural youth, besides additional income to the farming community.
- Currently, a top-down mechanism of research prioritization is being practiced, whereas a bottom up approach involving farmers, private sector and NGOs, is needed to make it more relevant. In addition, this process will also help in better ownership and participation of all stakeholders as well as identifying specific research gaps that need to be addressed on priority.
- For adoption of new innovations, initiatives such as Institute-Village Linkage Program (IVLP) has to be expanded to cover different agro-climatic regions of the country. This is important since most of the extension systems for technology transfer, operative in the past, are either non existent or non effective in the present context.
- For required awareness among young generation, it is necessary that history of Indian agriculture is taught both at the school and college levels, as is being done for the science subjects. Knowledge of agriculture is, indeed, essential being an important sector of our National economy.
- Farmers' role for protecting the germplasm, such as the landraces and varieties of different crops including the under-utilized, medicinal and aromatic plants, has to be recognized and the Farmers' Rights need to be protected. Also mechanisms are needed for access and benefit sharing, besides registration and protection of valuable germplasm materials.
- The National Seed Regulatory reforms need to be accelerated for the promotion of seed industry and much needed benefits to those engaged in varietal improvement, maintenance, conservation and seed development activities.
- In order to enhance the farmer-scientist interface, a non-political Forum/Body has to be established at the national level for required facilitation. Hence, there is an obvious need for the creation of an Organization/Agency/Board/Authority at the National level for the authentic documentation and promotion of farmers' innovations in order to accelerate new innovations in agriculture.

Symposium on **FARMER-LED INNOVATIONS FOR SUSTAINABLE AGRICULTURE**

December 14-15, 2007

Venue: Department of Biotechnology, Birsa Agricultural University, Ranchi (Jharkhand)

PROGRAM

Friday, 14 December, 2007

09:00-10:00 A.M.	Registration	
10:00-10:30 A.M.	Inaugural Session	
	Welcome Address	Dr. RP Singh 'Ratan', BAU
	Special Remarks	Dr. AK Sikka , NRAA
	Address by Guest of Honour "Importance of Farmers' Led Innovations"	Dr. S Nagarajan , PPV & FRA
	Chairman's Remarks	Dr. NN Singh , Vice-Chancellor, BAU
	Inaugural Address by Chief Guest	Dr. RS Paroda , TAAS
	Vote of Thanks	Dr. PS Pathak , NAAS
10:30-10:45 A.M.	Tea/Coffee Break	

SESSION-I: Agro-biodiversity Conservation and Genetic Enhancement

Chairman: **Dr. S Nagarajan**, Chairperson, PPV & FRA

10:45-11:00 PM	Horticulture	Dr. S Kumar
11:00-11:30 PM	Medicinal Plants	Dr. BM Choudhary
11:30-12:00 PM	Agro-forestry	Dr. AK Jaiswal
12:00-12:15 PM	Livestock	Dr. AK Sinha
12:15-12:30 PM	Fishery	Dr. AK Singh
12:30-12:45 PM	Agro-biodiversity	Dr. JB Tomar
12:45-01:45 PM	Six farmer speakers: Sri Anand Shankar Roy (Godda), Sri Sadanand Mandal (Dumka), Sri Kuldeep Singh (Sahibganj), Sri Yadunath Gorai (E. Singhbhum), Sri Bidhanchandra Roy (Giridih), Sri Barunlal Singh (Dumka)	
01:45-02:00 PM	General Discussion	
02:00-02:30 PM	Lunch	

SESSION-II: Integrated Natural Resource Management (INRM)

Chairman: **Dr. AK Sikka**
 Co-Chairman: **Dr. PS Pathak**

02:30-02:50 PM	ITK for Livestock Disease Management	Dr. BK Roy
02:50-03:10 PM	Organic Farming and Farming Systems	Dr. BN Singh
03:10-03:30 PM	ITK for Crop Diversification	Dr. RP Singh 'Ratan'
03:30-04:30 PM	Seven farmer speakers: Sri Kaira Sinku (W. Singhbhum), SriJhari Mahto (Bokaro), Sri Kapildeo Thakur (Palamau), Sri Pratap Narayan Singh (Hazatibagh), Sri Dhaneshwar Mahto (Lohardaga), Sri Ramkesh Choudhary (Garhwa) and Sri Baidyanath Dangi (Chatra)	
04:30-05:00 PM	General Discussion	
05:00-05:30 PM	Tea/Coffee Break	
05:30-06:30 PM	Evening Lecture: "Strategy for Increasing Productivity Growth Rate in Agriculture"	Dr. RS Paroda, TAAS
06:30-07:30 PM	Cultural Function	

Saturday, 15 December, 2007

PLENARY SESSION

Chairman: **Dr. RS Paroda**, Chairman, TAAS
 Co-Chairman: **Dr. NN Singh**, Vice-Chancellor, BAU

09:00-10:15 A.M.	Panel Discussion: Promoting Farmers' Role for Sustainable Agriculture Panelists: (Four speakers - 15 minutes each) Dr. NN Singh, Sri Ashok Bhagat, Vikas Bharti, Prof. Indrajeet Dey and Sri AS Roy (Farmer)	
10:15-10:30 A.M.	General Discussion	
10:30-11:00 A.M.	Tea/Coffee Break	
11:00-12:30 PM	Recommendations and Concluding Remarks	
01:00 PM	Lunch	

List of Participants

Name & Designation	Address
Abbas SG, Chairman (Ecology & Environment)	Faculty of Forestry, BAU, Ranchi
Ahmad S, Addl. Director Extension Education	BAU, Ranchi
Anuranjan, SMS (Agricultural Extension)	KVK, Gumla
Baboo Bangali, Director, IINRG,	Ranchi
Bara N, Head, Deptt. of Agricultural Extension	BAU, Ranchi
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Bharti, SMS (Home Sc.)	KVK, Giridih
Bhushan S, SMS (PP)	KVK, Godda
Chandra Mishra Akhilesh, SMS	KVK, Garhwa
Choubey S, Program Coordinator	KVK, Palamau
Choudhary BM, Chairman	Department of Horticulture, BAU, Ranchi
Choudhary Ramkesh, Farmer	KVK, Garhwa
Dey PHARP, Palandu	
Dongi Baidyanath, Farmer	KVK, Chatra
Dubey GS, Dean P.G.S.-cum-DRI	BAU, Ranchi
Dwivedi AK, Program Coordinator	KVK, Giridih
Ekka Arti Beena, I/c Program Coordinator	KVK, East Singhbhum
Gorai Nil Mohan, Farmer	KVK, East Singhbhum
Gorai Yadu Nath, Farmer	KVK, East Singhbhum
Gupta NK	NBPGR, Ranchi
Haider ZA, Associate Dean (Biotechnology)	College of Biotechnology, BAU, Ranchi
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Kaushik CK	KVK, Deoghar
Kongari Basanti	DEE, BAU, Ranchi
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Kumar Atul, Assistant Professor	BAU, Ranchi
Kumar Atul, Scientist	Plant Pathology, BAU, Ranchi
Kumar Mukesh	KVK, Latehar
Kumar Pankaj	DEE, BAU, Ranchi
Kumar Pramod, I/c Program Coordinator	KVK, West Singhbhum
Kumar Pramod, SMS (Agricultural Engineering)	KVK, Pakur
Kumar Prashant, Coordinator (NHM)	BAU, Ranchi
Kumar S, Head, HARP, ICAR	HARP, Palandu
Kumar Sanjeev, SMS	KVK, Dumka
Kumari Kiran, SMS	KVK, Lohardaga
Lakra Valeria, Dy Director (Information)	DEE, BAU, Ranchi
Mahto Dhaneswar, Farmer	KVK, Lohardaga
Mahto Jhari Ram, Farmer	KVK, Bokaro
Mandal Sadanand, Farmer	KVK, Dumka
Mishra A, Program Coordinator	KVK, Simdega
Mishra Nand Kishore, Farmer	KVK, Deoghar
Munda Karia, Farmer	KVK, Gumla
Nagarajan S, Chairman, PPV & FRA	New Delhi
Oraon Dharma, SMS	KVK, Chatra
Oraon J, Head, Department of Extension	RVC, Ranchi
Oraon Lohra, Farmer	KVK, Gumla

Name & Designation	Address
Paroda RS, Chairman, TAAS	New Delhi
Pathak PS, Member, Executive Committee, NAAS	New Delhi
Prasad Devendra, Chairman (Entomology)	BAU, Ranchi
Prasad Ritlal	Giridih
Prasad SM, Registrar	BAU, Ranchi
Prasad Rameshwar, Comptroller	BAU, Ranchi
Rai AK, Farmer	KVK, Godda
Rai Bidhan Chandra, Farmer	KVK, Giridih
Rai BK, Chairman (Pharmacology & Toxicology)	BAU, Ranchi
Ranjan Rakesh, SMS (Horticulture)	KVK, Latehar
Rawal Dharmendra	DEE, BAU, Ranchi
Roy BK, Chairman	RVC, Ranchi
Sathi Sanjay, SMS	KVK, West Singhbhum
Satyapriya, Assistant Professor	BAU, Ranchi
Seth Pankaj	KVK, Sahibganj
Shekhar Sandeep	DEE, BAU, Ranchi
Sikka AK, NRAA	New Delhi
Singh AK, Chairman (Aquaculture)	RVC, Ranchi
Singh Balraj, OSD	BAU, Ranchi
Singh Barun Lal, Farmer	KVK, Dumka
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Singh Pratap Narayan, Farmer	KVK, Holy Cross, Hazaribagh
Singh Rajesh Kumar	DEE, BAU, Ranchi
Singh Rajiv, Farm Manager	KVK, Gumla Vikas Bharti
Singh Ramparwesh	KVK, Latehar
Singh Ranjay Kr., I/c Program Coordinator	KVK, Chatra
Singh RP 'Ratan', Director Extension Education	BAU, Ranchi
Singh RP, Director (Seeds & Farms)	BAU, Ranchi
Singh Sant Kumar, Chairman (Animal Breed. & Gen.)	RVC, Ranchi
Singh Shankar Kr., Program Coordinator	KVK, Lohardaga
Singh SP, SMS	KVK, Deoghar
Singh Srikant, Program Coordinator	KVK, Dumka
Singh Uday Kr., I/c Program Coordinator	KVK, Bokaro
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Sinha Rekha, Sr. Scientists, HOD (H. Sc.)	BAU, Ranchi
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Srivastava Adarsh Kr., SMS (Agricultural Extension)	KVK, Dhanbad
Thakur Kapil Dev, Farmer	KVK, Palamau
Tigga Indrajeet, Farmer	KVK, Lohardaga
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Recent Publications

1. Regulatory Measures for Utilizing Biotechnological Developments in Different Countries- First Foundation Day Lecture, delivered by Dr. Manju Sharma, Secretary, Department of Biotechnology, Government of India, October 17, 2005.
2. Enabling Regulatory Mechanisms for Release of Transgenic Crops-Brainstorming Session, October 18, 2003, Highlights.
3. Challenges in Developing Nutritionally Enhanced Stress Tolerant Germplasm - Special Lecture, delivered by Dr. SK Vasal, Distinguished Scientist CIMMYT, January 15, 2004.
4. Role of Science and Society Towards Plant Genetic Resources Management - Emerging Issues - Brainstorming Session, January 7-8, 2005, Highlights and Recommendations.
5. Role of Information Communication Technology in Taking Scientific Knowledge/ Technologies to the End Users - National Workshop, January 10-11, 2005, Recommendations.
6. Public-Private Partnership in Agricultural Biotechnology - Second Foundation Day Lecture, delivered by Dr. Gurdev S Khush, Adjunct Professor, University of California, Davis, USA, October 17, 2005.
7. First Dr. MSSwaminathan Award for Leadership in Agriculture, March 15, 2005, Highlights.
8. Farmer-Led Innovations for Increased Productivity, Value Addition and Income Generation - Brainstorming Session, October 17, 2005, Highlights and Recommendations.
9. Strategy for Increasing Productivity Growth Rate in Agriculture, Dr. RS Paroda, August, 2006, Strategy Paper.
10. The Second Dr. MS Swaminathan Award for Leadership in Agriculture, October 9, 2006, A Brief Report.
11. Farmer-Led Innovations Towards Plant Variety Improvement, Conservation and Protecting Farmers' Rights-National Dialogue, November 12-13, 2006, Highlights and Recommendations.



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